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# Increasing Paramedic Students' Resiliency to Stress: Assessing correlates and the impact of intervention

*by Shirley Porter and Andrew Johnson*

## Abstract

This pilot study focused on paramedic students in the final year of their college program. Using a randomised controlled pre-test/post-test design, this study sought to determine whether perceived peer support, negative attitude towards emotional expression, and specific coping processes, would be significantly predictive of levels of self-reported psychological distress and burnout symptomology, and whether a group counselling intervention could be utilized to influence change in desired directions. Significant correlates were identified and a number of interesting trends emerged that underscore the need for further research in this area.

## Increasing Paramedic Students' Resiliency to Stress: Assessing Correlates and the Impact of Intervention

Paramedics face day-to-day circumstances that are unimaginable in most other lines of work. They typically deal with individuals who are going through some of the most frightening and critical times of their lives. The decisions and actions of these first responders have the potential to save lives and minimize injury. Thus, the pressure to make quick and accurate assessments can be great. Additionally, paramedics must deal with the reality that regardless of their actions, some patients will die. Likewise, there will be situations they encounter which will defy justice, fairness, and/or logic. Their work environment is changing and unpredictable from call to call. Given all of these factors, the inherent occupational stress of this type of work can take a significant toll on the physical and emotional health of the paramedics themselves. It is this issue that has more recently become the focus of burgeoning research.

Studies indicate that up to 22% of paramedics suffer from symptoms of Post-Traumatic Stress Disorder (PTSD) (Bennett, Williams, Page, Hood & Woollard, 2004; Blumenfield & Byrne, 1997; Clohessy & Ehlers, 1999; Jonsson & Segesten 2004; van der Ploeg & Kleber, 2003) and as many as 8.6% are at risk for burnout (van der Ploeg & Kleber, 2003). Ten percent of medics report levels of fatigue that place them at risk for sick leave or disability (van der Ploeg & Kleber, 2003).

Within a sample of ambulance personnel, Alexander & Klein (2001) found that 32% reported clinical levels of general psychopathology on the General Health Questionnaire (which identifies minor psychiatric disorders within community samples) compared to 18% in the general population. In another study, 10% of emergency ambulance workers reported probable clinical levels of depression and 22% reported probable clinical levels of anxiety

(Bennett et. al, 2004). Further, Boudreaux, Mandry, & Brantley (1997) found that among paramedics, greater occupational stress was related to elevated levels of depression, anxiety, hostility and global psychological distress.

There has been a recent trend in the literature to try to identify and understand factors that contribute to the development of burnout and psychological distress amongst paramedics. Currently three factors stand out as potentially significant predictors: 1) peer support; 2) attitude towards emotional expression; and 3) coping strategies.

### Peer Support and Attitude Towards Emotional Expression

Peer support levels have been found to be inversely related to rates of fatigue, burnout, stress symptoms and PTSD amongst emergency workers (Beaton, Murphy, Pike & Corneil, 1997; Corneil, Beaton, Murphy, Johnson & Pike, 1999: Stephens & Long, 1997; van der Ploeg & Kleber, 2003). Similarly, Lowery and Stokes (2005) found that both dysfunctional peer support and negative attitude towards emotional expression were predictive of the development of PTSD symptoms among paramedic students and that not only was functional peer support difficult for student paramedics to access from the outset, but it didn't become any more accessible as their tenure increased. Moreover, while emergency workers indicate that peer support is important to assist them in dealing with stress (Jonsson & Segesten, 2003), concerns regarding confidentiality, social rejection, being seen as inadequate, and risks to career prospects, keep many from asking for support and expressing emotions with peers (Alexander & Klein, 2001; Lowery & Stokes, 2005; Pogrebin & Poole, 1991). As Alexander and Klein (2001) found, while a majority of paramedics believe that keeping their thoughts and feelings to themselves was not helpful, over 80% admitted to doing just that.

### Coping Strategies

The coping strategies that paramedics typically employ tend to focus on emotional repression (Regehr, Goldberg & Hughes, 2002). These strategies unfortunately have a highly significant positive relationship with psychological and physical stress symptoms (Wastell, 2002). In a study of the correlates of specific coping processes, Boudreaux et al (1997), using the Ways of Coping Questionnaire (WOC), identified Accepting Responsibility, Confrontative Coping, and Escape-Avoidance as the coping styles that were most consistently related to maladaptive outcomes (i.e., greater burnout, higher levels of perceived stress, and increased physiological reactivity).

### Current Study

In light of these findings, it would seem that lack of functional peer support, negative attitude towards emotional expression, and maladaptive coping processes are commonplace within the occupational culture of paramedics – thus potentially increasing the risk of maladaptive outcomes for these first responders. Previous research has suggested that programs and services designed to assist paramedics in better managing occupational stress might decrease distress levels (Alexander and Klein, 2001; Boudreaux et al,

1997). Hence, identification of effective interventions and strategies to increase resiliency are needed to proactively support the health and safety of paramedic students and paramedics in the field.

The purpose of the present pilot study was two-fold. First, it investigated whether perceived peer support, attitude towards emotional expression, and use of specific coping processes were predictive of levels of burnout and psychological distress symptoms reported by paramedic students. Second, in contrast to the predominantly retrospective, descriptive research that has been done in this area in the past, this study used a randomised controlled pre-test/post-test design to determine whether or not the aforementioned predictors of burnout would change in the desired directions, among individuals who participated in a psychoeducational group intervention. Further, change in levels of burnout and psychological distress symptomology were examined to determine whether the psychoeducational group intervention produced significant changes within the treatment group.

Specific predictions were:

- Perceived positive peer support would be inversely related to symptoms of psychological distress and burnout.
- More stoic attitudes towards emotional expression (higher scores on the ATEE) would be related to increased symptoms of psychological distress and burnout.
- Use of specific coping strategies (i.e., Accepting Responsibility, Confrontative Coping, and Escape-Avoidance) would be positively related to increased psychological distress.
- In contrast to their peers in a non-treatment control group, paramedic students who participated in psychoeducational group sessions focusing on the development of adaptive stress management strategies, would report: a higher degree of perceived peer support; more positive attitudes towards emotional expression; lower endorsement of specific coping strategies for dealing with stress (i.e., Accepting Responsibility, Confrontative Coping, and Escape-Avoidance); and a greater reduction in burnout and psychological distress symptoms.

## Method

### Participants

Twenty-nine participants (13 women) from the final year of a 2-year college paramedic program were recruited for this study. As there were 41 potential participants, this indicates a participation rate of 71%, suggesting that significant volunteer bias is relatively unlikely. Fourteen participants (8 women) were randomly assigned to be part of the control group, and fifteen participants (5 women) were randomly assigned to be part of the treatment group. Six participants dropped out of the study before post-test measures were collected. Three of these individuals (all men) were in the control group, and three of these individuals were in the treatment group (2 women). The final sample was, therefore, comprised of 23 individuals, 11 in the control group (8 women), and 12 in the treatment group (3 women). Ages ranged from 20 to 25 in the control group ($M$ = 21.82, $SD$ = 1.72), and from 19 to 28 in the treatment group ($M$ = 21.58, $SD$ = 2.31). This age

difference was not statistically significant.

As part of the paramedic program, participants engaged in clinical activities prior to and during this study. During their first year of the program, they completed 150 hours of clinical work including placements on ambulances, in emergency and urgent care departments of hospitals, and in long-term care facilities. During the second year, students completed 120 hours of ambulance placement in their third semester, and then proceeded to full-time (i.e., 44 hours per week) ambulance placement throughout their last semester.

**Measures**

The pre and post-test assessment package was comprised of 6 self-report measures:

1. Demographic Information Questionnaire (i.e., name, age, gender)
2. Ways of Coping Questionnaire (WOC) - a 66-item measure used to assess and identify cognitive and behavioural processes of coping. It is comprised of 8 scales: Confrontative Coping; Distancing; Self-Controlling; Seeking Social Support; Accepting Responsibility; Escape-Avoidance; Planful Problem Solving; and Positive Reappraisal. This measure provides participants with a 4-point rating scale to indicate the frequency with which they use specific coping processes when dealing with stressful situations. Internal reliability, as assessed with Cronbach's coefficient alpha, ranges from .61 to .79 across the 8 scales (Folkman & Lazarus, 1988).
3. Symptom Checklist 90 Revised (SCL-90-R) - a 90-item measure which assesses a broad range of psychological distress symptoms via 9 primary symptom dimensions. The dimensions of interest to this study included: Somatization (distress arising from perceptions of bodily dysfunction); Depression (a representative range of the manifestations of clinical depression); Anxiety (general signs of anxiety including some somatic correlates); Interpersonal Sensitivity (feelings of inadequacy and inferiority particularly in comparison to others); and Hostility (thoughts, feelings and actions that are characteristic of the state of anger). The Global Severity Index which measures overall psychological distress (i.e., combines the number and intensity of distress symptoms), and the Positive Symptom Distress Index which is a measure of symptom intensity, were also used. This assessment tool uses a 5-point Likert scale (ranging from 0=Not at All to 4= extremely) on which participants indicate how much a problem has distressed them during the previous week. Internal reliability coefficients for the 9 symptom dimensions as assessed by coefficient alphas, ranged from a low of .77 to a high of.90. Test-retest reliability for the scales falls between .80 and .90 (Derogatis, 1994).
4. Maslach Burnout Inventory (MBI) - a 22-item measure used to assess burnout as manifested by health care providers. Participants indicate how often they feel a specific way about their job on a 7-point rating scale (0=Never, 6=Everyday). This inventory is comprised of three subscales which measure three aspects of the burnout syndrome: 1) the Emotional Exhaustion subscale which measures "feelings of being emotionally

overextended and exhausted by one's work"; 2) the Depersonalization subscale which assesses "an unfeeling and impersonal response toward recipients of one's service, care, treatment or instruction"; and 3) the Personal Accomplishment subscale which "assesses feelings of competence and successful achievement in one's work with people"(Maslach, Jackson, & Leiter, 1996). These subscales have Cronbach's alpha coefficients of .86, .76 and .70 respectively. (van der Ploeg & Kleber, 2003).

5. Attitude Towards Emotional Expression Scale - a 20-item measure with a 5 point Likert scale, used to assess individual differences and behaviours concerning emotional expression (e.g., "When I'm upset I bottle up my feelings", "You should always keep your feelings to yourself"). Participants indicate their level of agreement with how true a given statement is about them. High scores indicate more stoic attitudes, beliefs, and behaviours. This measure has a Cronbach's alpha of .90 indicating high internal reliability (Joseph, Williams, Irving, & Cammock, 1994).
6. Peer Support Crisis Support Questionnaire – for the purposes of the current study, only 6 of the 14 items comprising this measure were used. Items included in this study related to perception of peer support in general, while those omitted referred to perception of peer support following a specific crisis. The six items were summed to obtain an overall score of perceived peer support. Participants used a 7-point Likert scale (1=Never, 7=Always) to answer the questions presented in way that best describes their current situation (e.g., "Whenever you want to talk, how often is there a colleague willing to listen?", "Are your colleagues sympathetic or supportive?"). Internal reliability as measured by Cronbach's alpha for the entire questionnaire has ranged from .67 to .82 (Joseph, Andrews, Williams & Yule, 1992; Lowery & Stokes, 2005). Cronbach's alpha for the 6-item scale used in this study was .75.

### Procedure

In the fall of 2007, all final year students in a 2-year community college paramedic program were invited to participate in this study. An overview of the purpose and methods of the study was provided, and questions were answered.

Upon providing informed consent, participants were randomly assigned to either a non-treatment control Group or treatment Group. All completed the pre-test assessment package which took between 20-45 minutes to complete.

Due to the size of the treatment group (n=15), this group was further divided into two smaller groups (n=8 and n=7) which received the same treatment intervention. Smaller groups of this size are recommended for counselling group interventions as they are large enough to provide opportunities for members to interact with others, while still being small enough to allow members a sense of belonging within the group (Corey & Corey, 1987). Both groups met with the same counsellor for 13 psycho-educational group sessions over a 4 month period – prior to beginning a semester of full-time clinical placement. This allowed for almost weekly group sessions (i.e., 12 sessions) over the course of the 15 week fall semester, plus two

additional sessions prior to students beginning their full-time clinical placements at the start of the winter semester. Group focus was three-fold: 1) fostering positive peer support; 2) building positive attitudes towards emotional expression; and 3) increasing participants' knowledge and application of adaptive coping strategies for dealing with stressful events. Group process and content were based on a cognitive-behavioural counselling theory of change. (See Appendix A for a listing of session topics). Group sessions typically were typically formatted to include: a breathing/focusing/relaxation exercise, participant check-in; introduction to session topic; individual/small group reflective exercise; large group debriefing; breathing/focusing/relaxation exercise, and check-out focusing on how participants might consciously utilize cognitive/behavioural strategies during the next week to enhance their capacity to deal with stress. The eleventh session, however, which occurred the week prior to final exams had a different focus. This session was purely experiential and relaxational in focus, in that treatment group participants were invited to receive a 15-minute neck and back treatment from a registered massage therapist.

Control and treatment subjects completed the same assessment package after spending 2 months on full-time clinical placement (i.e., there was a six month interval between pre-test and post-test).

**Data Analysis**

Data were evaluated within four separate split-plot multivariate analysis of variance calculations, using time (pre-test versus post-test) and group (treatment versus control) as independent variables. The effect of interest for both of these analyses was the interaction term, as a significant interaction between time and group would suggest that the treatment was producing a significant change over time. In the event of a significant multivariate effect, univariate effects were evaluated against an unmodified alpha (Hummel & Sligo, 1971). In the event of a non-significant multivariate effect, a modified Bonferroni correction procedure was employed (Jaccard & Wan, 1996, p. 30).

The first family of comparisons consisted of eight 'ways of coping' (confrontative, distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, planful problem solving, and positive reappraisal). The second family of comparisons consisted of three 'burnout' variables (emotional exhaustion, depersonalization, and personal accomplishment), an 'attitude towards emotional expression' variable, and a 'peer support' variable. The third family of comparisons consisted of five specific domains of psychological distress (somatization, interpersonal sensitivity, depression, anxiety, hostility), as measured by the SCL90-R. Finally, the fourth family of comparisons included two general indices of psychological distress (global severity index, and positive symptom distress index).

To evaluate the determinants of psychological distress and burnout, Pearson product-moment correlations were computed among variables assessing peer support, attitudes towards emotional expression, coping strategies, 'burnout', and symptoms of psychological distress. **Results**

### Predictors of Psychological Distress and Burnout

Tables 1 presents a correlation matrix on the pre-test scores of all participants, that evaluates three hypothesized constructs (i.e., peer support, attitude towards emotional expression, and ways of coping) as predictors of five specific domains of psychological distress (somatization, interpersonal sensitivity, depression, anxiety, hostility), and two general indices of psychological distress (global severity index, and positive symptom distress index). Table 2 presents a correlation on the pre-test scores of all participants, which similarly evaluates the three hypothesized constructs as predictors of the three domains of burnout (emotional exhaustion, depersonalization, and feelings of personal accomplishment).

Table 1
Bivariate correlations among pretest measures of ways of coping, attitudes toward emotional expression, peer support and psychological distress

Table 2
Bivariate correlations among pretest measures of ways of coping, attitudes toward emotional expression, peer support and burnout

### Ways of Coping

Means (and standard deviations) for the eight coping strategies are presented in Table 3. The interaction between group and time was non-significant at the multivariate level. Univariate analyses suggest, however, that individuals within the treatment group demonstrate significantly improved planful problem-solving, $F(1, 20) = 13.20$, $p < .006$. Individuals within the treatment group also demonstrate a trend towards improvement in positive reappraisal, $F(1, 20) = 7.839$, $p = 0.011$.

Table 3
Pretest / posttest means (and standard deviations) for the eight coping processes

Means (and standard deviations) for the three domains of burnout, attitude towards emotional expression, and peer support are presented in Table 4. The interaction between group and time was non-significant at the multivariate level. Univariate analyses suggest that individuals within the treatment group demonstrate a change in their attitude toward emotional expression that approaches statistical significance, $F(1, 20) = 4.99$, $p = 0.037$ in the direction of individuals becoming less stoic following treatment. Individuals within the treatment group also demonstrate increases in feelings of personal accomplishment that approach statistical significance, $F(1, 20) = 3.388$, $p = 0.081$.

Table 4
Pretest/posttest means (and standard deviations) for three dimensions of burnout, attitudes toward emotional expression, and peer support

Careful examination of the means in Table 4 reveals that all three domains of the burnout inventory show a greater improvement

among individuals within the treatment group, as compared with the control group. Thus, although the magnitude of the change is not statistically significant, the direction shows a trend towards statistical significance.

### Psychological Distress

Means (and standard deviations) for the five specific domains of psychological distress (somatization, interpersonal sensitivity, depression, anxiety, and hostility), and for the two general indices of psychological distress (global severity index, and positive symptom distress index) are presented in Table 5. Within the analysis of the five specific domains of psychological distress, the interaction between group and time was non-significant at the multivariate level. Univariate analyses suggest that there are no significant interaction effects for any of the psychological distress variables. Similarly, the multivariate interaction between group and time was non-significant for the analysis involving the two general indices of psychological distress, as were the univariate analyses on the individual variables. Individuals within the treatment group did, however, demonstrate a trend towards improvement on the positive symptom distress index, $F(1, 21) = 3.443$, $p = 0.078$.

Table 5
Pretest/posttest means (and standard deviations) for measures of psychological distress

As was the case with the domains of burnout, all seven of these psychological distress variables demonstrated a greater improvement among individuals within the treatment group, as compared with individuals in the control group. Again, although the magnitude of the change is not statistically significant, the direction shows a trend towards statistical significance.

Finally, when comparing the mean change from pre-test to post-test, on the 7 psychological distress variables and 3 burnout variables, the fact that the treatment group showed greater improvement, in comparison to the control group, on 10/10 of these variables was determined by a sign test to be statistically significant at p=0.00195.

## Discussion

### Correlates of Burnout and Psychological Distress

*Peer Support.* The findings of this pilot study add to the debate regarding the importance of peer support in predicting distress among paramedics. In contrast to some previous studies (Beaton et al., 1997; van der Ploeg & Kleber, 2003), perceived peer support among paramedic students in the current study was not significantly correlated with symptoms of psychological distress and burnout – and although the lack of demonstrated statistical significance may be partially due to a lack of statistical power, it should be noted that the correlations were close to zero for most psychological symptoms. This finding is consistent with results presented by Regehr et. al (2002), who report no significant correlations between perceived support from coworkers, and symptoms of depression and levels of distress.

*Attitude towards emotional expression.* Negative attitude towards emotional expression was, as predicted, significantly correlated with measures of psychological distress and burnout, and the relationship suggested that participants who endorsed more stoic attitudes , and thus were less likely to express their emotions, were also more likely to report increased symptoms of interpersonal sensitivity, depression, and overall global distress, as well as burnout symptoms related to emotional exhaustion and depersonalization. This finding expands upon the previous findings of Lowery & Stokes (2005) who found that paramedic students' negative attitude toward expressing emotions was significantly correlated to their post-traumatic stress disorder scores, and Stephens & Long (1997), who found that when all other social support variables were controlled for, only attitudes towards expressing emotion significantly moderated the impact of trauma on resultant PTSD symptoms.

*Coping Processes.* In terms of the relationships between coping processes and psychological distress and burnout symptoms, a number of factors emerged. As predicted, based on previous studies, higher scores on Accepting Responsibility and Escape-Avoidance variables were significantly correlated with increased psychological distress symptomology. Contrary to our initial hypotheses, however, Confrontative Coping was found to be significantly inversely correlated to somatization, which may indicate that aggressive efforts to deal with a problem may have somehow protected these individuals from internalizing physiological stress reactions. Additionally, Distancing and Self-Controlling coping scales were significantly correlated with the Personal Accomplishment scale of the MBI, which is a measure of feelings of competence and successful achievement of one's work with people. Since lack of Personal Accomplishment has been identified as one of the major components of burnout syndrome, it would appear that Distancing and Self-Controlling coping processes are related to increased resiliency on this burnout scale.

**Pre-test Post-test Comparisons**

No significant differences were found between the treatment and control groups on the measure of perceived peer support. The treatment group did, however, differ from the control group in terms of a change in their attitude towards emotional expression, indicating movement towards becoming less stoic between the pre and post-test period. While the treatment group did not differ significantly from the Control group with respect to the predicted decrease in specific coping processes (i.e., Accepting Responsibility, Escape Avoidance, and Confrontative Coping), there was however, an unexpected trend with respect to an increase in the endorsement of two other coping processes between the pre and post-test period: Planful Problem Solving (i.e., deliberate problem-focused efforts to alter the situation, paired with an analytic problem solving approach), and Positive Reappraisal (i.e., focusing on personal growth in an effort to create positive meaning). This may be due to integration, by treatment group participants, of the cognitive-behavioural strategies focused on within the psychoeducational group, to assist them in identifying aspects of problems within their control and then developing solution-focused cognitive-behavioural strategies they could effectively use to deal with these problems and accompanying stress.

With respect to burnout and psychological distress symptoms, differences between groups were less pronounced, but a trend was apparent. Individuals in the treatment group, as compared with those in the control group, demonstrated greater improvement on all 7 scales of psychological distress and 3 burnout variables. Thus, it appears that individuals in the treatment group may have experienced some improvements in symptomology following the treatment.

While these changes were not statistically significant between groups, questions remain regarding whether participants themselves noticed these changes and if so, whether they found them to be personally meaningful or significant.

### Limitations and Suggestions for Further Study

This pilot study provided an opportunity to further explore the correlates of occupational stress as experienced by paramedic students. It also provided a glimpse into the possibility of impacting these variables via a counselling group intervention.

Since this sample was comprised of paramedic students only, was small in size, and random assignment resulted in treatment and control groups that were unbalanced in terms of gender, the results must be interpreted with caution. However, some interesting observations and trends emerged that are worthy of additional study.

Future research should continue not only to identify and verify the correlates of psychological distress and burnout, but also to identify interventions that are potentially effective in increasing resiliency to occupational stress among paramedic students. To do this, a mixed method (i.e., qualitative and quantitative measures) pre-test post-test design, with control and treatment groups comprised of a large sample of male and female participants should be utilized. A design that post-tests immediately after a psychoeducational group intervention is completed, and then retests a year later, may also be helpful to determine whether change is evident at the end of treatment and if so, whether it is consistent over time. It may also be valuable to compare novice paramedics to veterans, in to assess whether years of experience on the job influences outcomes.

In conclusion, this is an area that is worthy of further research, as it may have important ramifications for the emotional and physical health of our first responders, as well as implications for curriculum in the post-secondary institutions which train these professionals.

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**Appendix A**

Psychoeducational Group Topics
(Treatment Group Only)
Session 1: Welcome, Introductions, Ground Rules, Overview of Topics, & Dyad Interviews
Session 2: Individual Nature of Stressors and Stress Responses
Session 3: Personal Resources for Dealing with Stress
Session 4: Relaxation Strategies
Session 5: Identifying and Evaluating Automatic Thoughts
Session 6: Personal Rules, Standards, and Expectations
Session 7: Personal/Professional Responsibilities
Session 8: Personal Power/Sphere of Influence
Session 9: Exploring Coping Styles
Session 10: Developing Confidence & Realistic Expectations on Placement
Session 11: Registered Massage Therapy Trials
Session 12: Dealing with Difficult People
Session 13: Personal/Professional Boundaries & Additional Relaxation Strategies

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